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Blood. 2004 Feb 1;103(3):761-6. Epub 2003 Oct 2.  
PMID: 14525760 [PubMed - indexed for MEDLINE]

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L3	1620947	(cell near2 size or big or large)	USPAT	OR	OFF	2005/04/05 20:17
L4	1237529	(polar or polarity near3 morphology or shape)	USPAT	OR	OFF	2005/04/05 20:17
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AN 2002171282 EMBASE

TI Large scale, efficient synthesis of 9-unsubstituted dipyrinone.

AU Chen Q.; Wang T.; Zhang Y.; Wang Q.; Ma J.

CS Q. Chen, Synapse Technologies, Inc., 6660 NW Marine Drive, Vancouver, BC  
V6T 1Z4, Canada. qchen@synapse-tech.com

SO Synthetic Communications, (2002) Vol. 32, No. 7, pp. 1031-1040.

Refs: 45

ISSN: 0039-7911 CODEN: SYNCBV

CY United States

DT Journal; Article

FS 029 Clinical Biochemistry

LA English

SL English

ED Entered STN: 20020523

Last Updated on STN: 20020523

AB 9-Unsubstituted dipyrinone 8, the useful precursor for the synthesis of biliverdins, bilirubins, and other bile pigments, was synthesized in large scale and high yield starting from acetaldehyde and nitroethane in eight steps with overall yield 10%. The key intermediate 3,4-dimethyl-2-ethoxycarbonylpyrrole 3 was synthesized via Zard-Barton's method in high yield.

L7 ANSWER 2 OF 19 MEDLINE on STN DUPLICATE 2

AN 2002177068 MEDLINE

DN PubMed ID: 11909697

TI Immunohistochemical localization of the antioxidant enzymes biliverdin reductase and heme oxygenase-2 in human and pig gastric fundus.

AU Colpaert Erwin E; Timmermans Jean Pierre; Lefebvre Romain A

CS Heymans Institute of Pharmacology, Ghent University, Ghent, Belgium.

SO Free radical biology & medicine, (2002 Apr 1) 32 (7) 630-7.  
Journal code: 8709159. ISSN: 0891-5849.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 200208  
ED Entered STN: 20020324  
Last Updated on STN: 20020821  
Entered Medline: 20020820  
AB The intrinsic antioxidant capacities of the bile pigments biliverdin and bilirubin are increasingly recognized since both heme degradation products can exert beneficial cytoprotective effects due to their scavenging of oxygen free radicals and interaction with antioxidant vitamins. Several studies have been published on the localization of the carbon monoxide producing enzyme heme oxygenase-2 (HO-2), which concomitantly generates biliverdin; histochemical data on the distribution of biliverdin reductase (BVR), converting biliverdin to bilirubin, are still very scarce in large mammals including humans. The present study revealed by means of immunohistochemistry the presence of BVR and HO-2 in mucosal epithelial cells and in the endothelium of intramural vessels of both human and porcine gastric fundus. In addition, co-labeling with the specific neural marker protein-gene product 9.5 (PGP 9.5) demonstrated that both BVR and HO-2 were present in all intrinsic nerve cell bodies of both submucous and myenteric plexuses, while double labeling with c-Kit antibody confirmed their presence in intramuscular interstitial cells of Cajal (ICC). Our results substantiate the hypothesis that BVR, through the production of the potent antioxidant bilirubin, might be an essential component of normal physiologic gastrointestinal defense in man and pig.

L7 ANSWER 3 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1999:221764 CAPLUS  
DN 131:43039  
TI Composition, structure and morphological characteristics of gallstones in the Province of Granada. Spain  
AU Aguilar, T.; Hidalgo, J. M.; Rodriguez, T.  
CS Dept. De Cirugia y sus especialidades. Universidad de Tenerife, Spain  
SO Ars Pharmaceutica (1998), 39(2), 129-132  
CODEN: APHRAN; ISSN: 0004-2927  
PB Editorial Universidad de Granada  
DT Journal  
LA Spanish  
AB Gallstones extracted by surgery at St. Cecilio and Virgen de las Nieves University Hospitals in Granada, Spain, during a 1-yr period, were examined Both general and stratified composition were studied, as well as their structure and morphol. characteristics. The mixed composition appears to be the most common, followed by, in frequency, cholesterol calculi.  
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L7 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1996:179782 CAPLUS  
DN 124:227274  
TI Molecular, morphological, and physiological evolution in south pacific scincid lizards (Prasinohaema, Sanguiviridis, Lipinia, biliverdin)  
AU Austin, Christopher Cowell  
CS Univ. of Texas, Austin, TX, USA  
SO (1996) 213 pp. Avail.: Univ. Microfilms Int., Order No. DA9603793  
From: Diss. Abstr. Int., B 1996, 56(10), 5366

DT Dissertation  
LA English  
AB Unavailable

L7 ANSWER 5 OF 19 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.  
on STN  
AN 96254501 EMBASE  
DN 1996254501  
TI Reduction of biliverdins to bilirubins: Its metabolic regulation under various physiological conditions.  
AU Valasinas A.; Frydman B.

CS Medical School/School of Pharmacy, University of Wisconsin, 425 N. Charter Street, Madison, WI 53706, United States  
SO Current Medicinal Chemistry, (1996) Vol. 3, No. 4, pp. 291-302.  
ISSN: 0929-8673 CODEN: CMCHE7  
CY Netherlands  
DT Journal; General Review  
FS 029 Clinical Biochemistry  
048 Gastroenterology  
LA English  
SL English  
ED Entered STN: 960919  
Last Updated on STN: 960919  
AB Heme and hemoproteins are degraded in mammals by oxidation to biliverdins. These linear tetrapyrroles are reduced to bilirubins by a cytosolic biliverdin reductase (BvR) at the rate of 250-400 mg per day. While the bulk of biliary biliverdin is biliverdin IX $\alpha$ , other isomers such as biliverdins IX $\beta$  and IX $\gamma$  are formed under conditions of oxidative stress by the chemical degradation of hemoproteins, or from the degradation of abnormal hemoglobins. Rat liver BvR was found to be a NADPH-dependent reductase with a broad substrate specificity, which efficiently reduces a large number of biliverdins as long as they carry two propionate side-chains. The enzyme was found to exist in three molecular forms, two of which (molecular forms 1 and 3) interconvert under conditions of oxidative stress or in the presence of oxidant species. The different molecular forms have different reduction rates for the biliverdin isomers, thus securing the efficient reduction of biliverdins to bilirubins under different physiological conditions. The molecular mechanism of the enzymatic reduction entails the protonation of the basic pyrrolenine nitrogen (N23) which results in a mesomeric positive charge on the neighboring meso C-10 carbon. The C-10 then undergoes a nucleophilic addition of the hydride released by the NADPH cofactor of BvR. Our studies have established the structural requirements for a biliverdin to be efficiently reduced to a bilirubin. This metabolic step gains relevance as synthetic hemes and metalloporphyrins are increasingly used in therapeutics.

L7 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1995:556515 CAPLUS  
DN 123:136474  
TI Multiple molecular recognition properties of the lipocalin protein family  
AU Flower, Darren R.  
CS Dep. Physical Chemistry, Fisons Plc, Pharmaceuticals Div., Loughborough, Leicestershire, LE11 ORH, UK  
SO Journal of Molecular Recognition (1995), 8(3), 185-95  
CODEN: JMOR4; ISSN: 0952-3499  
PB Wiley  
DT Journal  
LA English  
AB The lipocalins, a diverse family of small extracellular ligand binding proteins, display a remarkable range of different mol. recognition properties. While their binding of small hydrophobic mols., and to a lesser extent their binding to cell surface receptors, is well known, it is shown here the formation of macromol. complexes is also a common feature of this family. Anal. of known crystallog. structures reveals that the lipocalins possess a conserved common structure: an antiparallel  $\beta$ -barrel with a repeated +1 topol. Comparisons show that within this overall similarity the structure of individual proteins is specifically adapted to bind their particular ligands, forming a binding site from an internal cavity (within the barrel) and/or an external loop scaffold, which gives rise to different binding modes that reflects the need to accommodate ligands of different shape, size, and chemical structure. The architecture of the lipocalin fold suggests that both the ends and sides of this barrel are topol. distinct, differences also apparent in analyses of structural and sequence variation within the family. These differences

can be linked to exptl. evidence suggesting a possible functional dichotomy between the two ends of the lipocalin fold. The structurally invariant end of the mol. may be implicated in general binding to common cell surface receptors, while the more variable end is adapted to the specialized tasks of binding small ligands and forming macromol. complexes via an exposed binding surface.

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on STN DUPLICATE 3

AN 93287763 EMBASE  
DN 1993287763

TI Investigation on intermolecular forces between bile pigments and polar model compounds mimicking the chromophore - Protein interactions in biliproteins.

AU Krois D.

CS Institut fur Organische Chemie, Universitat Wien, Wahringerstrasse 38, A-1090 Wien, Austria

SO Tetrahedron, (1993) Vol. 49, No. 39, pp. 8855-8864.  
ISSN: 0040-4020 CODEN: TETRAB

CY United Kingdom

DT Journal; Article

FS 029 Clinical Biochemistry

LA English

SL English

ED Entered STN: 931031  
Last Updated on STN: 931031

AB A systematic investigation of intermolecular interactions of biliverdin-IX $\alpha$ -dimethyl ester and 2,18-bridged helically fixed verdinoid and rubinoid analogues with a variety of chiral compounds possessing a limited number of donor and/or acceptor sites was performed. To evaluate interaction strengths the concentration dependence of the induced chiral discrimination between M and P helical species as detected by CD was used. Biliverdin esters show pronounced association only with compounds exhibiting strong hydrogen bonding donor properties. In particular, if the donor of the ligand is provided by a carboxylic acid group defined 1:1 complexes are formed but no protonation of the tetrapyrrole backbone takes place. 2,18-bridged helical bilirubins - being monomeric under the conditions employed - behave similarly but interact with acceptors, too. Association constants were determined by Scatchard plot analysis. The quantitative data gained allow to map the non-covalent, polar binding properties of helical biliverdins and bilirubins. The implications of results for the conformation determining interactions in biliverdin peptides and biliproteins are discussed.

L7 ANSWER 8 OF 19 MEDLINE on STN DUPLICATE 4

AN 92037639 MEDLINE  
DN PubMed ID: 1935972

TI Expression of rat heme oxygenase in Escherichia coli as a catalytically active, full-length form that binds to bacterial membranes.

AU Ishikawa K; Sato M; Yoshida T

CS Department of Molecular and Pathological Biochemistry, Yamagata University School of Medicine, Japan.

SO European journal of biochemistry / FEBS, (1991 Nov 15) 202 (1) 161-5.  
Journal code: 0107600. ISSN: 0014-2956.

CY GERMANY: Germany, Federal Republic of

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199112

ED Entered STN: 19920124  
Last Updated on STN: 19980206  
Entered Medline: 19911219

AB A plasmid, pKK-RHO, was constructed by incorporating the coding sequence

of a cDNA for rat heme oxygenase into the expression vector pKK233-2. Escherichia coli strain XL1-blue transformed with pKK-RHO produced a catalytically active, full-length heme oxygenase. The 32-kDa native enzyme expressed, was localized in the bacterial membranes, possibly due to the spontaneous membrane-binding properties of a hydrophobic segment in its C-terminal region. During cultivation, a few degraded forms of heme oxygenase that had lost their membrane-associative properties appeared. Probably, some bacterial proteases cut the native heme oxygenase at sites near its C-terminus and so release hydrophilic peptides of heme oxygenase from the membranes. A 30-kDa polypeptide, one of the degraded forms of heme oxygenase, retained ability to accept electrons from NADPH--cytochrome P450 reductase and also activity for catalyzing breakdown of heme to biliverdin. The cultured cells were pale green. From them we extracted green pigment(s), of which the absorption spectrum closely resembled that of biliverdin, suggesting that a large amount of the endogenous heme of E. coli was actually degraded to biliverdin by the expressed heme oxygenase.

L7 ANSWER 9 OF 19 MEDLINE on STN DUPLICATE 5  
AN 85097750 MEDLINE  
DN PubMed ID: 6518163  
TI The specificity of biliverdin reductase. A study with different biliverdin types.  
AU Tomaro M L; Frydman R B; Awruch J; Valasinas A; Frydman B; Pandey R K; Smith K M  
NC GM-11973 (NIGMS)  
HL-22252 (NHLBI)  
SO Biochimica et biophysica acta, (1984 Dec 21) 791 (3) 350-6.  
Journal code: 0217513. ISSN: 0006-3002.  
CY Netherlands  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 198502  
ED Entered STN: 19900320  
Last Updated on STN: 19970203  
Entered Medline: 19850225  
AB The specificity of rat liver biliverdin reductase was examined with the help of a series of synthetic biliverdins. The mixture of the four biliverdin isomers obtained by the chemical oxidation of protohemin I, protohemin XI, protohemin XIV and harderohemin were used as substrates of biliverdin reductase and were compared with the mixture of biliverdins IX alpha-delta. Biliverdin reductase (molecular form 1) from rat liver efficiently reduced the isomer mixtures of biliverdins I, XI, XIV and harderobiliverdins to the bilirubins in the presence of NADPH. The enzymatic reduction of the different biliverdin types was studied in the presence of different NADPH analogues. NADPH could be replaced by NADH, 3-acetyl NADPH and deamino-NADPH with retention of a good substrate activity only in the case of biliverdins of types I and IX and harderobiliverdins. Biliverdins XI and XIV were efficiently reduced only in the presence of NADPH and an excess of NADH. Bactobilin III-alpha was also very efficiently reduced by biliverdin reductase in the presence of both NADPH and NADH but not in the presence of the other analogues. These results indicate that biliverdin reductase reduced bilitriene acids substituted with non-polar and polar residues.  
L7 ANSWER 10 OF 19 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN DUPLICATE 6  
AN 1984:200815 BIOSIS  
DN PREV198477033799; BA77:33799  
TI BILIVERDIN ACCUMULATION IN THE CAUDAL INTESTINAL SEGMENT OF JUVENILE ADULT LAMPREYS PETROMYZON-MARINUS.  
AU LANGILLE R M [Reprint author]; YOUSON J H  
CS SCARBOROUGH COLL, UNIV TORONTO, WEST HILL, ONT, CANADA M1C 1A4

SO Canadian Journal of Zoology, (1983) Vol. 61, No. 8, pp. 1824-1834.  
CODEN: CJZOAG. ISSN: 0008-4301.

DT Article

FS BA

LA ENGLISH

AB The possibility of bile pigment excretion by the caudal intestinal region in lampreys was investigated using spectrophotometry, routine electron microscopy and an exogenous protein tracer. The green pigment present in the caudal intestines of immediately postmetamorphic and juvenile adult lampreys was biliverdin. Cytoplasmic inclusions, which resembled biliary inclusion bodies and which were not formed as a result of exocytosis of materials at the apical surface, were found in the caudal intestine in absorptive, caveolated and mucous cells concomitant with the appearance of the biliverdin. Evidence therefore indicates that these inclusions probably contain large quantities of the bile pigment **biliverdin** and other substances with which it may be complexed. The caudal segment of the adult lamprey intestine probably serves as a site for the elimination of bile pigment in the form of biliverdin. This method of elimination of bile pigment may be an essential function of the intestine owing to the absence of a bile duct in this animal.

L7 ANSWER 11 OF 19 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
DUPLICATE 7

AN 1979:258633 BIOSIS

DN PREV197968061137; BA68:61137

TI RED AND BLUE-GREEN BILE PIGMENTS IN THE SHELL OF ASTRAEA-TUBER MOLLUSCA ARCHAEOGASTROPODA.

AU JONES P [Reprint author]; SILVER J

CS DEP CHEM, UNIV W INDIES, ST AUGUSTINE, TRINIDAD

SO Comparative Biochemistry and Physiology B, (1979) Vol. 63, No. 2, pp. 185-188.  
CODEN: CBPBB8. ISSN: 0305-0491.

DT Article

FS BA

LA ENGLISH

AB The shells of A. tuber contain red and blue-green pigments extracted by aqueous acid solutions. The dissolved red pigment was unstable and changed rapidly to a grey or black-green solution. The extremely polar pigments were isolated by a macroreticular resin and separated by a cellulose based weak anion exchange system. The spectroscopic data showed that the blue-green pigment was a **biliverdin** with 1 or more highly **polar** groups attached. The black-green pigment gave poorly defined absorption spectra but the presence of a bilatriene compound was confirmed by oxidation studies. The red pigment in the A. tuber shell is possibly a biladiene which isomerizes to a green bilatriene on contact with acidic solutions.

L7 ANSWER 12 OF 19 MEDLINE on STN  
DUPLICATE 8

AN 77185334 MEDLINE

DN PubMed ID: 862775

TI Linkage between chromophore and apoprotein in the **biliverdin**-protein of the scales of big blue parrotfish, *Scarus gibbus* Ruppell.

AU Yamaguchi K; Kubo K; Hashimoto K; Matsuura F

SO Experientia, (1977 May 15) 33 (5) 583-4.  
Journal code: 0376547. ISSN: 0014-4754.

CY Switzerland

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 197707

ED Entered STN: 19900314  
Last Updated on STN: 19900314  
Entered Medline: 19770718

L7 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1978:102273 CAPLUS  
DN 88:102273  
TI Clinical significance of morphofunctional changes in the hematoencephalic barrier in different periods of life  
AU Sharipov, F. Kh.; Pol'skii, V. I.  
CS Tadzh. Gos. Med. Inst., Dushanbe, USSR  
SO Zdravookhranenie Tadzhikistana (1977), (4), 32-6  
CODEN: ZDTAAJ; ISSN: 0514-2415  
DT Journal  
LA Russian  
AB Samples of the choroid plexus of the lateral ventricle were obtained from humans ranging in age from stillborns through 85-yr-olds and were histochem. analyzed with respect to gross morphols., cytomorphol., biliverdin, and bilirubin. Increasing amts. of deterioration in the choroid plexus were observed with increasing age; beginning with 20-yr-olds, constricted capillaries and the formation of psammoma bodies in the completely constricted capillaries were observed. The psammoma bodies increasingly replaced the epithelial cells with progressive aging. The cytoplasm of the epithelial cells of the choroid plexus from the very young to adolescent subjects contained small droplets or granules that stained pos. for biliverdin. The cytoplasm of similar samples from >20-yr-old people contained large, spherical erythrocyte-like inclusions that stained pos. for biliverdin or the biliverdin-bilirubin complex. This apparently is a manifestation of the phagocytosis of erythrocyte by the choroid plexus epithelial cells with the concomitant degradation of Hb. The extent of such phagocytosis generally increased with age except for a temporary decrease observed in the 60-75-yr-old group. The various changes presumably lead to an increased permeability of the blood-brain barrier.

L7 ANSWER 14 OF 19 MEDLINE on STN DUPLICATE 9  
AN 75160145 MEDLINE  
DN PubMed ID: 1129759  
TI Sequence of heme decomposition by the coupled oxidation of myoglobin with ascorbic acid.  
AU Yoshida T; Kikuchi G  
SO Tohoku journal of experimental medicine, (1975 Jan) 115 (1) 67-74.  
Journal code: 0417355. ISSN: 0040-8727.  
CY Japan  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 197507  
ED Entered STN: 19900310  
Last Updated on STN: 19900310  
Entered Medline: 19750714  
AB Occurrence of a biliverdin-iron complex or verdoheme as the final oxidation product of heme moiety in the coupled oxidation of myoglobin and ascorbic acid in air was evidenced and the sequence of heme decomposition in this reaction system was concluded to proceed in the order of protoheme, hydroxyheme and biliverdin-iron complex or verdoheme. The final oxidation product usually remains attached to globin and appears to give a diffuse absorption possibly with a peak at 760 nm at neutral pH. In alkaline solution the compound exhibits an absorption peak at 840 nm, and when reduced with Na(2)S(2)O(4), it is readily converted to biliverdin which exhibits a large absorption with a peak originally at 800 nm, being followed by a gradual shift to 760 nm.

L7 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1971:94480 CAPLUS  
DN 74:94480  
TI Green pigment produced from tuna metmyoglobin

AU Koizumi, Chiaki; Nonaka, Junsakuu  
CS Tokyo Univ. Fish., Tokyo, Japan  
SO Nippon Suisan Gakkaishi (1970), 36(12), 1258  
CODEN: NSUGAF; ISSN: 0021-5392  
DT Journal  
LA English  
AB Under aerobic but not under anaerobic conditions, the prosthetic group of metmyoglobin (I) from red muscle of big eye tuna [Thunnus obesus (tunny)] was converted to biliverdin (II) or a closely related compound Crystalline I 1.5, cysteine-HCl.H<sub>2</sub>O 9.5, and trimethylamine oxide.2H<sub>2</sub>O  
3.2 g in 1 l. phosphate buffer, pH 6.5, were heated at 72-74° for 5 min. After centrifugation, the green precipitate was washed with water and acetone, extracted with HCl-acetone, concentrated in vacuo, adjusted to pH 5-6

with

NaOAc, and extracted with ether. Crystals of a Me ester resembling II di-Me ester were obtained. Whether this green pigment participates in the greening of tuna was not determined

L7 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1969:519962 CAPLUS  
DN 71:119962  
TI Enzymic oxidation of bilirubin  
AU Brodersen, R.; Bartels, P.  
CS Koebenhavn Univ., Copenhagen, Den.  
SO European Journal of Biochemistry (1969), 10(3), 468-73  
CODEN: EJBCAI; ISSN: 0014-2956

DT Journal  
LA English

AB The following agents were found to oxidize bilirubin in vitro: Hb and horse-radish peroxidase (both with H<sub>2</sub>O<sub>2</sub>), cytochrome c, xanthine oxidase, and an insol. oxidase, present in brain and other tissues. Kinetic consts. were determined. The process with Hb was inhibited competitively by 2 product mols. The insol. oxidase from brain was present in mitochondria. The supernatant fraction contained an inhibitor. The oxidase was inactive in the absence of salt and was unspecifically activated by a number of salts, the activity depending upon ionic strength, irrespective of which ions were present. Reaction products included biliverdin and a yellow, diazo-neg., polar pigment with the same oxidation level as bilirubin.

L7 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1956:74693 CAPLUS  
DN 50:74693  
OREF 50:14076h-i,14077a  
TI Serum bile pigments  
AU Billing, B. H.; Lathe, G. H.  
CS Queen Charlotte's Maternity Hosp., London  
SO Proceedings of the International Congress of Biochemistry (1955) 123  
CODEN: 18USAR

DT Journal  
LA Unavailable

AB Protein-free exts. of serum from jaundiced patients give bilirubin (fat-soluble and giving the indirect van den Bergh reaction) and 2 water-soluble pigments (I and II) giving the direct reaction. The excretion of bilirubin (III) in the bile involves its conversion to II, which is more polar than I. Coupling with diazotized sulfanilic acid splits III into 2-dipyrrroles and yields an azo pigment (IV), while II forms a more polar azo pigment (V). I gives a mixture of IV and V. The formation of I probably involves a change in half of the III mol., while in II both halves of the mol. are altered. Diazotized aniline, sulfanilic acid, and p-aminobenzoic acid all give stable azo pigments with II and III (no details). Oxidation of fistula bile yields "verdin" compds. which are

more polar than biliverdin and show the same relation to it as do the direct-reacting pigments to III.

L7 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 10  
AN 1945:27219 CAPLUS  
DN 39:27219  
OREF 39:4374g-i,4375a  
TI The formation of bile pigments from hemoglobin and verdoglobin by liver extracts  
AU v. Kesztyus, Lorand; Kiese, Manfred  
SO Klinische Wochenschrift (1943), 22, 746-7  
CODEN: KLWOAZ; ISSN: 0023-2173  
DT Journal  
LA Unavailable  
AB Liver pulp and liver extract, prepared by extraction of liver with an equal weight of  
0.1 mol. phosphate (pH 7.4) at 37° under toluene and centrifuging, form bile acids from hemoglobin and verdoglobin. The formation from the latter occurs far more readily than from the former. By the use of hemoglobin there is initially a slight formation of verdoglobin. At pH 5.2 liver extract forms bile pigment from verdoglobin but from hemoglobin neither bile pigment nor verdoglobin are formed. At pH 7.4 the addition of acid inhibits the pigment formation but not that of verdoglobin from hemoglobin. The verdoglobin is characterized as verdoglobin S by its absorption maximum at 620 m $\mu$  and that of its CO compound at 615-620 m $\mu$ . The yield in bilirubin amounts to 10-20% of the transformed verdoglobin or hemoglobin. A large part of the pigment is biliverdin.  
. Dialysis against H<sub>2</sub>O removes from the liver extract the capacity to form bile pigments, but it is restored by the addition of boiled liver juice, inert itself. If the extract is 3/4-saturated with (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> a large part of the inert protein is precipitated. Total saturation ppts. the active principle, which however must be reactivated with boiled liver juice.

L7 ANSWER 19 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
AN 1944:2469 CAPLUS  
DN 38:2469  
OREF 38:414c  
TI Biliverdin of toad blood  
AU Ruz, Julio Cabello  
SO Revista de la Sociedad Argentina de Biología (1943), 19, 81-93  
CODEN: RSABAC; ISSN: 0037-8380  
DT Journal  
LA Unavailable  
AB Small amounts of bile pigments appear to be formed in the body of the toad elsewhere than in the liver which is the principal site of formation. Destruction of hemoglobin in the blood, as by poisoning with phenylhydrazine, causes a greenish discoloration of most of the body tissues and a large increase in biliary excretion of biliverdin.

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